

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No.: 09/539,409

REMARKS

This Amendment, submitted in response to the Office Action dated September 24, 2004, is believed to be fully responsive to each point of rejection raised therein. Accordingly, favorable reconsideration on the merits is respectfully requested.

Claims 1-37 remain pending in the application. Claims 32-33 remain allowable over the art of record but remain objected to for depending on rejected base claims. Claims 34 and 36 have been rejected under 35 U.S.C. Section 112, first paragraph, for not being described in the originally filed specification. Claims 1-4, 16-19, 31, 35 and 37 have been rejected under 35 U.S.C. Section 103 as being unpatentable over "Selective Area Image Compression" (IBM Technical Disclosure Bulletin, Vol. 29, No. 12 (May 1, 1987), hereafter "IBM Disclosure") in view of Wang (U.S.P. 4,598,369). Claims 5-6 and 20-21 have been rejected under Section 103 as being unpatentable over the IBM Disclosure in view of Wang and further in view of Kuni (JP 405272952A). Claims 7-8 and 22-23 have been rejected under Section 103 as being unpatentable over the IBM Disclosure in view of Wang and further in view of Nakajima (U.S.P. 4,944,189). Claims 9-12, 14-15, 24-27 and 29-30 have been rejected under Section 103 as being unpatentable over the IBM Disclosure in view of Wang and further in view of Hama (U.S.P. 4,751,507). Claims 13 and 28 have been rejected under Section 103 as being unpatentable over the IBM Disclosure in view of Wang and Kuni and further in view of Hama. Applicant propose the following comments in traversal of the Section 112 and prior art rejections.

With regard to the Section 112 rejection of claims 34 and 36, the discussion of distance as a geometric feature of a measuring point is described in the specification at page 17, for example. The recitation of the angle as another type of measuring point is described at page 2,

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lines 23-26 in conjunction with the paragraph bridging pages 27-28 of the disclosure and Fig. 6. In particular, pages 26-27 teach description of the measuring points as coordinates x, y (at two locations) and a measuring result between them. See Fig. 6. One skilled in the art would recognize that a measuring point can relate to either distance or angle based on the discussion at page 2 of the disclosure. Accordingly, the originally filed disclosure does contemplate the saving of angle information as a form of geometric measuring point. Therefore, Applicant would request withdrawal of the Section 112 rejection of claims 34 and 36.

With regard to the prior art rejections, the present invention relates to radiation image storage. Detailed descriptions of the background and exemplary embodiment of the invention are set forth in the November 10, 2003 Amendment at pages 8-9. Applicant will refer the Examiner to these descriptions.

Turning to the newly cited art, the IBM Disclosure relates to partitioning an image. Referring to the Figure, an X-ray image includes a region A which does not include any information of medical significance and region B which includes a bone fracture to be analyzed. In order to preserve the resolution of the region B and to conserve memory and processing resources, the regions A and B are treated differently when digitized. In particular, while region A can be subject to destructive compaction (incurring some image loss), region B can be subject to non-destructive coding. The region B for the non-destructive or less destructive technique is identified by corner points x1, y1 and x2, y2.

Wang relates to a tomographic process whereby a patient is subject to radiation imaging at one plane to form multiple images, and from the multiple images at the one plane, images from other planes can become reconstructed. Abstract. Referring to Fig. 2 of Wang, assuming

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that a patient has a point of interest A in a plane 38 and a point of interest B in plane 40, multiple exposures will be taken while shifting the x-ray source. In the multiple exposures, the images are lined up so that point A substantially overlaps in each exposure. To reconstruct plane 40, the exposures would be overlapped using point B. Through subsequent processing, the points of interests A, B can be enhanced, and thus the points of interest at different planes can be provided without subjecting the patient to excessive radiation.

Nakajima relates to an ultrasonic apparatus to measure speckle velocity of moving members comprising random scattering bodies.

Hama relates to display and processing of a multiple resolution image.

Kuni relates to overlapped display of an x-ray image.

The Examiner contends the IBM Disclosure and Wang teach or suggest each feature of independent claim 1. Applicant submits that the rejection is not supportable for at least the following reasons.

First, as the Examiner apparently recognizes, the IBM Disclosure does not teach a measuring point for measuring a geometric feature of an object included in the radiation image. The coordinates x1, y1, and x2, y2 merely correspond to the corner points of a region to be processed by non-destructive compaction. The coordinates bear no relationship for any measurement of the bone appearing in the radiation image.

Second, and relatedly, the Examiner contends that it would be obvious to modify the system to include coordinates bounding only the object, such as the bone fracture. This is not feasible in view of the what the IBM Disclosure is attempting to achieve. The region B is being processed in a non-destructive manner in order to maintain the medically significant information

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relevant to diagnosis. The region A is being processed in a destructive manner to preserve resources. The Examiner's suggested modification would essentially trim details processed for any information adjacent to the bone fracture, for example, which would make the diagnosis more difficult. Therefore, there is no motivation to make the modification that the Examiner suggests.

Third, the Examiner concedes that the IBM Disclosure does not teach storage of a displayed image, but cites Wang to make up for the deficiency. The Examiner contends that it would be obvious to include the teachings of Wang in the IBM Disclosure in order to display images at any parallel plane. This motivation fails because Wang teaches away from its combination with the IBM Disclosure. A review of Wang indicates that multiple images must be taken and matched up along a reference feature in order to create the images in two planes. This would require detailed information from the entirety of each image in order to perform the initial match up of a reference point in a first plane and a subsequent reference point in a second plane. The destructive compaction used in the IBM Disclosure would render Wang inoperable since the IBM Disclosure relates to image localization. Conversely, the display of the image in Wang, in a non-compacted form, would require detailed processing of the entirety of an image. Therefore, the localized processing of the IBM Disclosure would be eradicated by the wide-area display and processing necessary in Wang.

For at least the above reasons, the rejection of claim 1 over the IBM Disclosure and Wang is not supportable. Because claim 16 includes features similar to those in claim 1, claim 16 is also patentable for the reasons set forth above. The remaining claims are patentable based on their dependency.

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With further regard to claims 7-8 and 22-23, the Examiner has rejected these claims over the combination of the IBM Disclosure, Wang and Nakajima. However, Nakajima relates to detection of movement of blood or other randomly scattered material using an ultrasonic wave. This technology is immaterial to the x-ray imaging of the IBM Disclosure and Wang. Therefore, the references are not combinable, and claims 7-8 and 22-23 are patentable for this additional reason.

Applicant submits that the additional references of Nakajima, Hama and Kuni do not make up for the deficiencies of the primary combination of the IBM Disclosure and Wang.

Applicant further adds claims 38-39 to describe the measurement point more particularly.

In view of the above, Applicant submits that claims 1-39 are in condition for allowance. Therefore it is respectfully requested that the subject application be passed to issue at the earliest possible time. The Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary.

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Respectfully submitted,



SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

Susan Perng Pan
Registration No. 41,239

WASHINGTON OFFICE
23373
CUSTOMER NUMBER

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